

WHAT IS CLAIMED IS:

1. A medical needle shield apparatus comprising:

a shield being extensible from a retracted position to an extended position to enclose a distal end of a needle;

5 a binding member disposed within the shield and defining binding surfaces that form an aperture configured for slidable receipt of the needle between the retracted position and the extended position,

the binding member including one or more drag inducing members that engage the needle during slidable receipt of the needle to create a drag force with the
10 needle, the drag force and shield facilitating rotation of the binding member relative to a longitudinal axis of the needle such that the binding surfaces engage the needle to prevent slidable movement of the needle in the extended position of the shield,

the binding member further including a retainer extending therefrom such that the retainer is engageable with the needle to prevent rotation of the binding member
15 prior to the extended position; and

a hub retainer being configured to engage a catheter hub.

2. A medical needle shield apparatus as recited in claim 1, wherein the binding member includes a substantially planar aperture plate that includes the binding surfaces that form the aperture.

20 3. A medical needle shield apparatus as recited in claim 2, wherein the aperture plate is substantially perpendicular relative to the longitudinal axis of the needle due to engagement of the retainer with the needle prior to the shield being in the extended position.

4. A medical needle shield apparatus as recited in claim 1, wherein the retainer includes a first portion extending from the binding member and a second portion extending from the first portion.

5 5. A medical needle shield apparatus as recited in claim 4, wherein the first portion extends from the binding member in substantially parallel alignment with the needle due to engagement of the retainer with the needle.

6. A medical needle shield apparatus as recited in claim 4, wherein the second portion extends transversely relative to the longitudinal axis of the needle and is configured for engagement with the needle.

10 7. A medical needle shield apparatus as recited in claim 6, wherein the second portion has a substantially planar portion for engagement with the needle.

8. A medical needle shield apparatus as recited in claim 1, wherein the at least one drag inducing member includes the aperture of the binding member such that the aperture engages the needle to create the drag force with the needle.

15 9. A medical needle shield apparatus as recited in claim 1, wherein the at least one drag inducing member includes a pair of friction members that extend to engage the needle to create the drag force with the needle.

10. A medical needle shield apparatus as recited in claim 1, wherein the at least one drag inducing member includes at least one friction member disposed on the needle.

20 11. A medical needle shield apparatus as recited in claim 1, wherein the at least one drag inducing member is integral to the binding member.

12. A medical needle shield apparatus as recited in claim 1, wherein the at least one drag inducing member includes a material having a smaller aperture than the aperture of the binding member.

13. A medical needle shield apparatus as recited in claim 12, wherein the material is formed of a resilient material.

14. A medical needle shield apparatus as recited in claim 1, wherein the at least one drag inducing member includes a separate unitary friction element disposed on the medical
5 needle.

15. A medical needle shield apparatus as recited in claim 14, wherein the unitary friction element includes friction elements for canting the binding member and the aperture of the binding member is disposed between the friction elements.

16. A medical needle shield apparatus as recited in claim 1, wherein the at least one
10 drag inducing members includes separate friction elements disposed on the needle for canting the binding member, and the aperture of the binding member is disposed between the friction elements.

17. A medical needle shield apparatus as recited in claim 1, wherein the shield includes a housing that defines at least one blocking member extending from an interior surface
15 thereof, the at least one blocking member being engageable with the binding member for urging the binding member to the binding orientation.

18. A medical needle shield apparatus as recited in claim 1, wherein the binding member is rotatable, relative to the longitudinal axis of the needle, between a non-binding orientation whereby the needle is slidable relative to the binding member and a binding
20 orientation whereby the binding surfaces engage the needle to prevent slidable movement of the needle in the extended position of the shield.

19. A medical needle shield apparatus as recited in claim 1, further comprising a rotatable housing for relative rotational movement about the needle.

20. A medical needle shield apparatus as recited in claim 19, wherein the shield is supported for relative rotational movement by the rotatable housing by at least one bearing.

21. The medical needle shield apparatus according to claim 20, wherein the hub retainer is disposed on the at least one bearing.

5 22. The medical needle shield apparatus according to claim 20, wherein the at least one bearing defines at least one blocking member extending from an interior surface thereof, the at least one blocking member being engageable with the binding member for urging the binding member to the binding orientation.

10 23. The medical needle shield apparatus according to claim 1, wherein the hub retainer is disposed on the housing.

24. The medical needle shield apparatus according to claim 1, wherein the retainer and hub retainer are monolithically formed such that the hub retainer extends from the retainer.

25. A medical needle shield apparatus as recited in claim 1, further comprising a means for extending the shield to the distal end of the needle.

15 26. A medical needle shield apparatus as recited in claim 1, further comprising a retainer shield to protect the hub retainer from being inadvertently moved from its intended position.

27. A medical needle shield apparatus comprising:

20 a shield being extensible from a retracted position to an extended position to enclose a distal end of a needle;

a binding member disposed within the shield and including an aperture for slidable receipt of the needle between the retracted position and the extended position,

the binding member defining a drag inducing means for facilitating rotation of the binding member relative to a longitudinal axis of the needle by frictional

drag forces between the drag inducing means and needle, and a binding surface means for engaging the needle to prevent slidable movement of the needle in the extended position of the shield,

the binding member further including a retainer means for preventing
5 rotation of the binding member; and

a hub retainer means for releasably engaging a catheter hub.

28. A medical needle shield apparatus as recited in claim 27, wherein the binding member is rotatable, relative to the longitudinal axis of the needle, between a non-binding orientation whereby the needle is slidable relative to the binding member and a binding
10 orientation whereby the binding surface means engages the needle to prevent slidable movement of the needle in the extended position of the shield.

29. A medical needle shield apparatus as recited in claim 27, further comprising a rotatable housing for relative rotational movement about the needle.

30. A medical needle shield apparatus as recited in claim 29, wherein the shield is
15 supported for relative rotational movement by the rotatable housing by at least one bearing.

31. A medical needle shield apparatus as recited in claim 30, wherein the hub retainer means is disposed on the at least one bearing.

32. A medical needle shield apparatus as recited in claim 30, wherein the at least one bearing defines at least one blocking member extending from an interior surface thereof, the at
20 least one blocking member being engageable with the binding member for urging the binding member to the binding orientation.

33. A medical needle shield apparatus as recited in claim 27, wherein the hub retainer means is disposed on the housing.

34. A medical needle shield apparatus as recited in claim 27, wherein the at least one drag inducing member includes at least one friction member disposed on the needle.

35. A medical needle shield apparatus as recited in claim 27, wherein the at least one drag inducing member is integral to the binding member.

5 36. A medical needle shield apparatus as recited in claim 27, wherein the at least one drag inducing member includes a separate unitary friction element disposed on the medical needle.

37. A medical needle shield apparatus as recited in claim 36, wherein the unitary friction element includes friction elements for canting the binding member and the aperture of
10 the binding member is disposed between the friction elements.

38. A medical needle shield apparatus as recited in claim 27, wherein the at least one drag inducing members includes separate friction elements disposed on the needle for canting the binding member, and the aperture of the binding member is disposed between the friction elements.

15 39. A medical needle shield apparatus as recited in claim 27, further comprising a means for extending the shield to the distal end of the needle.

40. A medical needle shield apparatus comprising:

a shield being extensible from a retracted position to an extended position to enclose a distal end of a needle;

20 a rotatable housing that encloses the shield, the rotatable housing supporting the shield for relative rotational movement therewith; and

a hub retainer being configured to engage a catheter hub.

41. A medical needle shield apparatus as recited in claim 41, further comprising:

a binding member disposed within the shield and defining binding surfaces that form an aperture configured for slidable receipt of the needle between the retracted position and the extended position,

5 the binding member including one or more drag inducing members that engage the needle during slidable receipt of the needle to create a drag force with the needle, the drag force and shield facilitating rotation of the binding member relative to a longitudinal axis of the needle such that the binding surfaces engage the needle to prevent slidable movement of the needle in the extended position of the shield, and

10 the binding member further including a retainer extending therefrom such that the retainer is engageable with the needle to prevent rotation of the binding member prior to the extended position.

42. A medical needle shield apparatus as recited in claim 41, wherein the shield is supported for relative rotational movement by the rotatable housing by at least one bearing.

15 43. A medical needle shield apparatus comprising:

a shield being extensible from a retracted position to an extended position to enclose a distal end of a needle;

a locking means for locking the shield to the needle in the extended position;

an end sensing member disposed in the shield and engaging the needle for

20 activating the locking means upon sensing the distal end of the needle; and

a hub retainer being configured to engage the end sensing member and an inner portion of a catheter hub such that upon activation of the locking means the end sensing member causes the hub retainer to release the catheter hub therefrom.

44. A medical needle shield apparatus as recited in claim 43, wherein the locking

means comprises:

a binding member disposed within the shield and defining binding surfaces that form an aperture configured for slidable receipt of the needle between the retracted position and the extended position,

5 the binding member including one or more drag inducing members that engage the needle during slidable receipt of the needle to create a drag force with the needle, the drag force and shield facilitating rotation of the binding member relative to a longitudinal axis of the needle such that the binding surfaces engage the needle to prevent slidable movement of the needle in the extended position of the shield, and

10 the binding member further including a retainer extending therefrom such that the retainer is engageable with the needle to prevent rotation of the binding member prior to the extended position.

45. A medical needle shield apparatus as recited in claim 43, wherein the locking means comprises:

15 a binding member disposed within the shield and defining binding surfaces that bind to the needle as the shield is in the extended position;

a sliding member disposed within the shield for slidable receipt of the needle between the retracted position and the extended position, the sliding member including a cavity for receipt of the binding member; and

20 ramp surfaces disposed on the shield for positioning the binding member in locking engagement with the needle in the extended position.

46. A medical needle shield apparatus comprising:

a shield being extensible from a retracted position to an extended position to enclose a distal end of a needle;

a hub retainer being configured to engage a catheter hub,
the shield further including a control surface for engaging an outer surface the
catheter hub for guiding and supporting extension of the catheter hub therefrom.

47. A medical needle shield apparatus as recited in claim 46, further comprising:

5 a binding member disposed within the shield and defining binding surfaces that
form an aperture configured for slidable receipt of the needle between the retracted position and
the extended position,

the binding member including one or more drag inducing members that
engage the needle during slidable receipt of the needle to create a drag force with the
10 needle, the drag force and shield facilitating rotation of the binding member relative to a
longitudinal axis of the needle such that the binding surfaces engage the needle to prevent
slidable movement of the needle in the extended position of the shield, and

the binding member further including a retainer extending therefrom such
that the retainer is engageable with the needle to prevent rotation of the binding member
15 prior to the extended position.

48. A medical needle shield apparatus comprising:

a shield being extensible from a retracted position to an extended position to
enclose a distal end of a needle;

a binding member disposed within the shield and defining binding surfaces that
20 form an aperture,

the binding member including one or more drag inducing members that
engage the needle,

the binding member further including a retainer extending therefrom such that the retainer is engageable with the needle to prevent rotation of the binding member prior to the extended position; and

a hub retainer being configured to engage a catheter hub.